Optical Modulator Based on A Microdisk Resonator

ABSTRACT

A modulator having a waveguide and a microdisk resonator is disclosed. The waveguide has an input port for receiving a light signal of wavelength λ and an output port for transmitting modulated light. The microdisk resonator has a resonance at λ and is coupled to the waveguide between the input and output ports such that at least 10 percent of the light traveling in the waveguide is coupled to the microdisk resonator. The microdisk resonator further includes a material having a first state and a second state, the material absorbing more of the light in the first state than in the second state. The first and second states are selectable by a signal that is applied to the microdisk resonator. In one embodiment, the waveguide and the microdisk resonator occupy different portions of a sheet of material having the various layers used to construct the resonator.